REMARKS

Favorable reconsideration of the above-identified application is requested in view of the following remarks.

Examiner Thompson is thanked for withdrawing the rejections under 35 U.S.C. § 112.

Claims 1-3, 5-9, 11-15, 17-22, and 24-28 are rejected under 35 U.S.C. §102(b) as being allegedly anticipated by U.S. Patent No. 5,987,127, hereinafter *Ikenoue.*

Ikenoue discloses an image forming apparatus and system. Additional data is embedded in a hard copy of a document as pixels arranged in a format so that binary data can be derived from the pixel pattern. The binary data indicates information relating to the document, e.g., document name, page number, copy code, password, rank of secret, page number, file name, user name, date, apparatus recognition code, and generation code (see Table 1 in *Ikenoue*). That is, upon scanning of a hard copy of a document, the pixel pattern is detected and indicates information. *Ikenoue* also discloses that some information is updatable, e.g., the generation code, number, and copy code.

One of the main purposes of *Ikenoue's* technology involves copying of secret documents. For example, it is desired to prevent or render difficult the copying of secret documents by unauthorized persons. Such copying is prevented or rendered difficult through the use of, e.g., passwords, user ID, and rank of secret. Also, it is a main purpose of *Ikenoue* to trace the history of a copied secret document from the original hard copy through the different generations. It is desired to track what devices worked on the secret copies, what users conducted the secret copying,

when the secret copying occurred, how many secret copies were made from each hard secret copy, and where the secret copying occurred. As stated in column 5, lines 34-37 in *Ikenoue*, "even if the secret document is leaked illegally, the leakage path can be confirmed and traced by reading the additional data embedded in the hard copy brought out illegally." For example, as shown in Fig. 2 of *Ikenoue*, the first generation is indicated by a numeral "n" (n=1, 2, 3, ...), and the second generation is indicated by the numeral "n" and "m" (m=1, 2, 3, ...), and so on. By indicating that information, some of the history of the copying of the document can be determined. That is, a document where n=5 and m=3 means that it is the third copy of the fifth copy of the original. Of course, additional information such as that shown in Fig. 2 is also available to complete the record and indicate who made the copy, when it was made, and what device made it.

Along those lines, it is necessary to ensure that the additional data has low visibility in a document, and that the position of the additional data is difficult to discern, thereby preventing or making it difficult for a user to destroy the additional data. Accordingly, *Ikenoue* discloses a process including use of data blocks to "chop up" the additional data into smaller less discernable pieces, and arbitrary positioning of the data blocks to make locating and destroying the additional data difficult. For example, if the additional data was always in the same spot on a document, finding and destroying such would be a simple exercise.

With regard to the process of detecting the additional information and subsequent embedding of updated additional information in a copy, it is important to realize that because *Ikenoue's* code contains so much data, that the code length in a copy will be too long to record together in one position. Therefore, *Ikenoue* cuts the

length of code into data blocks that are themselves coded and placed in various parts of the document image. *Ikenoue* divides the additional information into a plurality of blocks for embedding (column 16, lines 39-62). According to the description of embedding additional data beginning in column 16, line 39, and corresponding to Fig. 29, once the line of additional data (updated portions included) is generated, data blocks of binary numbers are generated by dividing the additional data into blocks of a predetermined dot number added with a block number (step S1801). Next, the data blocks are converted to signals of density (step S1803, Figs. 7 and 8). Areas for embedding the additional data are then searched for (step S1803) and if an area as long as a predetermined length is found to exist the positions of each dot are determined. Finally, the data blocks are written into the image data. Basically, as described in column 8, lines 37-40, if data blocks are embedded in a certain area, they become prominent as noise, i.e., easily discernable. Therefore, the embedded additional data is dispersed so as to be less discernable to a user.

Also, by disbursing the data blocks arbitrarily, a user is deterred from locating and destroying the additional information. As described in column 8, lines 29-36, it is stated that "[t]he data block of additional data can be embedded in an image at an arbitrary position irrespective of position and direction of density data, and each dot of additional data is so small that it cannot be recognized by the naked eye. Because the embedding position of additional data is not definite, it becomes impossible for a user who wants to leak secret documents to copy them by shading the additional data embedded in a hard copy."

Basically, *Ikenoue* chops the additional information into data blocks so that they fit into the document image and are seen less easily, and arbitrarily positions the data blocks to prevent discovery and destruction by a user.

Some of the subject matter claimed in the present application is directed toward analysis of detected pieces of additional information and judgment if any of the pieces of additional information includes information that is updatable. When a judgment result of the analysis is affirmative, the predetermined information included in the piece of additional information is updated and embedded into the image data at a location where the predetermined information is originally embedded. When the judgment result of the analysis is negative, the new piece of additional information including updated information is embedded into the image data at a location that does not overlap locations where the detected pieces of additional information are embedded. The updated information is equivalent to the predetermined information. Claims 1, 7, 13 and 20 generally define combinations including features generally directed toward the above-noted subject matter.

The Official Action proposes that the above subject matter is disclosed by the Fig. 2 of *Ikenoue* and that the corresponding description discloses that the generation information is "updatable" and that it is updated and then embedded at a location where the original is embedded. That is simply not the case. In column 13, the process for detecting the additional information is described in reference to Fig. 25. There it is stated that the coordinates for the characteristic points are searched and that binary numbers are extracted from the characteristic points according to a predetermined position relation. After the extraction of binary numbers is completed, the characteristic points are deleted from the image data to recover the image before

adding additional data. Then, the areas for embedding the additional data are searched for and the positions for each data block are determined. That is, the additional data in the original document is deleted from the image, only to be divided into data blocks and re-embedded in the next generation copy at arbitrary positions determined after a new search.

Therefore, it is clear that *Ikenoue* does not teach or suggest that the additional information is embedded either "at a location where the pre-determined information is originally embedded", or "at a location that does not overlap locations where the detected pieces of additional information are embedded".

Further, as noted above, *Ikenoue* actually teaches that it is undesirable to embed updated additional data at a location that is identical to the original location. Attention is again directed to the description in column 8, lines 29-36, referring to the benefits of having an arbitrary positioning of additional data, so that the position of the additional data is not definite and a user cannot find and destroy the additional data. This purpose of *Ikenoue* is incompatible with the above-note claimed subject matter.

With regard to claims 26-28, *Ikenoue* does not teach the requirement that additional information is embedded "at a location that does not overlap a location where the detected additional information is embedded". For this feature, the Examiner refers to Figure 4 and column 7, lines 35-43 of *Ikenoue*. However, as set forth above, it is clear that *Ikenoue* does not disclose that subject matter.

Further evidencing the difference between the claimed subject matter and *Ikenoue*, is the fact that the present invention does not require that a search be performed for an embedding location every time additional information is embedded,

since it is possible to embed updatable additional information extracted from inputted image data in the original location of the extracted information after being updated. Also, in the case of the extracted additional information not being updatable, the present invention enables new additional information that includes updated pre-determined information to be supplemented, by embedding this new information so as not to overlap with the original location of the extracted additional information. This facilitates subsequent management of image data.

Accordingly, in view of the foregoing amendments and remarks, the Examiner is respectfully requested to reconsider and withdraw the outstanding rejections.

In the event that there are any questions concerning this amendment, or the application in general, the Examiner respectfully urged to contact the undersigned attorney so that prosecution of the application may be expedited.

Respectfully submitted,

BUCHANAN INGERSOLL PC
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